UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,605	12/05/2001	Wayne Smith	50277-1755	3517

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EXAMINER
NGUYEN, MERILYN P

ART UNIT	PAPER NUMBER
2163	

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
	10/006,605	SMITH ET AL.
Office Action Summary	Examiner	Art Unit	
	Merilyn P. Nguyen	2163	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*13 March 2006*</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9, 12-23 and 26-28* is/are rejected.

7)☒ Claim(s) *10, 11, 24 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>*05 December 2001*</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☒ Other: <u>*Detailed Action*</u>.

DETAILED ACTION

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on 03/13/2006 has been entered.

2.   In response to the communication dated 03/13/2006, claims 1-28 are pending in this

office action.

3.   This application claims priority to Provisional Application No. 60/326,275 filed on

September 28, 2001.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or
> any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and
> requirements of this title.

4.   Claim 1 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-

statutory subject matter.

The basic of this rejection is set forth in a two-prong test of:

(1) whether the claim is directed to a judicial exception (law of nature, natural

phenomena, or an abstract idea) which would make it non-statutory if it is directed to the

exception itself, rather than a practical application of the exception. One way a practical

application can be established is through claiming a physical transformation (data transformation

is not a physical transformation and is not, in and of itself, evidence of statutory subject matter).

(2) Where there is no physical transformation being claimed, a practical application would be established by a useful, concrete and tangible result. That result is useful if it has specific, substantial and credible utility. Make a determination whether such is the case based on the perspective of one of ordinary skill having read the claim in light of the disclosure. It's concrete if it produces an assured, repeatable result (e.g., same input produces the same output each time the steps are performed). For it to be a tangible result, it must be more than just a thought or a computation. Instead, it must have real world value rather than being an abstract result.

In the present case, claimed invention (Claim 1) recites database management system performing operations on said objects as instances of said object class which does not provide concrete and tangible results.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5.   Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, this claim is a method claim comprising an apparatus ("a database management system"). Also, this claim is incomplete because the limitation of "said database

management system performing operations on said objects as instances of said object class" is

not related to other limitations of the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 1-5 and 12-19 and 26-28 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Harumi A. Kuno and Elke A. Rundernsteiner in the article "Using Object-

Oriented Principles to Optimize Update Propagation to Materialized Views" (herein after

Harumi), in view of Raitto (US 5,991,754).

Regarding claim 1, Harumi discloses a method for managing materialized views (See

page 310, left column, 3rd paragraph), the method comprising the steps of:

- o a database management system receiving a request to generate a materialized view that contains objects of an object class (See page 311, left column, paragraph 2, lines begin with "relational and object-oriented systems...update operations[3]);

- o in response to receiving said request, said database management system creating said materialized view (See page 311, sections 3.1 and 3.2);

- o said database management system performing operations on said objects as instances of said object class (See page 312, left column, section 4); and

wherein said object defines one or more attributes and one or more routines to invoke to

operate on the state of the objects of said object class (See page 311, section 3, lines

begin with " Let O be an infinite set...denoted classes").

However, Harumi is silent as to wherein the step of creating said materialized view includes

creating a container table that includes corresponding columns that correspond to said attributes

and that hold values for said attributes. On the other hand, Raitto teaches creating the

materialized view includes creating a container table that includes corresponding columns that

correspond to the attributes and that hold values for the attributes (See col. 2, lines 55-63 and col.

17, line 30 to col. 18, line 55, Raitoo et al.). It would have been obvious to one having ordinary

skill in the art at the time of the invention was made to create the materialized view by creating a

container table (summary table) that includes corresponding columns that correspond to the

attributes and that hold values for said attributes as suggested by Raitto because it's well known

in the art that creating the materialized view includes creating a container table (summary table)

speeding queries process based on container table.

Regarding claim 2, Harumi/Raitto discloses wherein the step of creating said materialized

view includes the step of creating an object materialized view, wherein said object materialized

view is associated with an object class and contains instances of said object class that correspond

to rows of said object materialized view (See page 311, sections 3, 3.1, and 3.2, Harumi et al.).

Regarding claim 3, Harumi/Raitto discloses wherein the step of creating said materialized view includes creating an object-relational view that includes at least one object column (See page 311, section 3, line begin with "Let O be an infinite set...properties", Harumi et al.).

Regarding claim 4, Harumi/Raitto discloses wherein the method further includes the step of receiving another request from a user requesting performance of said operations on said objects as instances of said object class (See page 312, left column, section 4, Harumi et al.).

Regarding claim 5, Harumi/Raitto discloses wherein the step of said database management system performing operations includes performing an operation on said objects by invoking a routine defined by said object class (See page 312, left column, section 4, Harumi et al.).

Regarding claim 12, Harumi/Raitto discloses said materialized view is associated with one or more base tables; a base table of said one or more base tables includes a base column typed as an object reference (See col. 2, lines 1-17, Raitto et al.); and wherein the step of creating said materialized view includes creating a particular column of said container table that: corresponds to said base column, and is typed as an object reference (See col. 10, lines 51-61, Raitto et al.).

Regarding claim 13, Harumi/Raitto discloses a first scope of said base column is a first set of tables; and the particular column has a second scope that is different than said first scope (See page 311, section 3.1, paragraph 4th).

Regarding claim 14, Harumi/Raitto discloses wherein the second scope is another materialized view based on said first set of tables (See pages 311, 312, sections 3.1 and 3.2, wherein multiview is implemented, Harumi et al.).

Regarding claims 15-19 and 24-28, Harumi discloses inherently a computer-readable medium carry one or more sequences of instructions which, when executed by one or more processors, causes the one or more processors to perform the above methods as one having ordinary skill in the art would have recognized that methods above can't be performed without computer-readable instruction.

7.   Claims 6-9 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harumi A. Kuno and Elke A. Rundernsteiner in the article "Using Object-Oriented Principles to Optimize Update Propagation to Materialized Views" (herein after Harumi), in view of Raitto (US 5,991,754), and further in view of Lieuwen (US 6,272,502).

Regarding claims 6-8, Harumi/Raitto discloses all the claimed subject matter as set forth above except for specifically teaching the step of generating refresh code that refreshes said materialized view based on modifications to one or more base tables of the materialized views. On the other hand Lieuwen teaches generating refresh code that refreshes the materialized views

based on medications to one or more base tables (See abstract, and Fig. 3B, and col. 3, line 61 to col. 4, line 14, Lieuwen et al.). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of refreshing materialized views of Lieuwen into the system of Harumi so that the materialized view could be refresh every time the database have been modified. The motivation would have been to enable the Harumi system to include up to date view, thus providing accurate results.

Regarding claim 9, Harumi/Lieuwen discloses wherein the step of generating refresh code includes the step of generating refresh code that references said corresponding columns but not as said attributes of said object class (See col. 3, line 61 to col. 4, line 14, Lieuwen et al.).

Regarding claims 20-23, Harumi discloses inherently a computer-readable medium carry one or more sequences of instructions which, when executed by one or more processors, causes the one or more processors to perform the above methods as one having ordinary skill in the art would have recognized that methods above can't be performed without computer-readable instruction.

Response to Arguments

8.   Applicant's arguments filed 03/13/2006 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the

teachings of the prior art to produce the claimed invention where there is some teaching,

suggestion, or motivation to do so found either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5

USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir.

1992). In this case, Applicant argues that there is no suggestion or motivation to modify the

reference of Harumi. Applicant also state,

> "A fundamental principle of operation of Harumi is that the objects and object attribute

values of a materialized view are not replicated and stored in a data structure separate form the

objects. Rather, only references to the objects are stored!

>> We define a materialized virtual class as a virtual class that caches its extent rather than
>> computing it upon access. **We do not replicate objects that belong to materialized**
>> **virtual classes, but instead store references to them**. We refer to this feature as
>> **membership materialization**. As it depends upon oid support, membership
>> materialization is unique to the object-oriented model. This feature reduces the storage
>> overhead of materialization as well as the time and effort required for view update
>> propagation **(demonstrated in Sections 4 and 5)**.
>> (emphasis added)

Harumi further teaches that this principle, referred to as membership materialization,

which involves storing only references to objects and not the attribute values, is fundamental to

reducing storage overhead and time and effort for updating a view. Harumi expressly dedicates a

large portion of itself, i.e. sections 4 and 5, to demonstrating that the principle achieves these

benefits. Even the title of Harumi expressly recites the notion of optimizing update propagation

to materialized views. Thus, the feature of creating a separate data structure for a materialized

view and using it to store values for attributes of the objects rather than just store references to

the objects is a feature that violates a principle of operation of Harumi - one that is fundamental

to achieving the very benefits for which Harumi was entitled."

The Examiner respectfully disagrees. The claimed limitation does not claim, "the objects and object attribute values of a materialized view are not replicated and stored in a data structure separate from the objects". Instead, it claims, "wherein the step of creating said materialized view includes creating a container table that includes corresponding columns that correspond to said attributes and that hold the values of said attributes" and the claimed limitation broadly appears to Examiner as that creating materialized view is creating a container table and nothing in the claim saying that a container table is different than materialized view. Thus, the Examiner uses Raitto to support the obviousness of Harumi. Since Harumi is silent as to wherein the step of creating said materialized view includes creating a container table that includes corresponding columns that correspond to said attributes and that hold values for said attributes, Raitto teaches creating the materialized view includes creating a container table that includes corresponding columns that correspond to the attributes and that hold values for the attributes (See col. 2, lines 55-63 and col. 17, line 30 to col. 18, line 55, Raitoo et al.). One having ordinary skill in the art would have recognized that creating the materialized view is creating a container table (summary table) in order speeding queries process based on container table.

Allowable Subject Matter

9.   Claims 10-11 and 24-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claim 10 discloses the limitation of "wherein said materialized view includes an object

column that has a plurality of nested tables that contain nested table objects" that is not taught or

supported by the prior art.

Claims 11, 24 and 25 depends on claim 10 therefore inherent the allowable subject matter

of claim 10.

Conclusion

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Merilyn P Nguyen whose telephone number is 571-272-4026.

The examiner can normally be reached on M-F: 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Don Wong can be reached on 571-272-1834. The fax phone numbers for the

organization where this application or proceeding is assigned are 571-273-8300 for regular

communications and 703-746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703-305-3900.

MN
March 19, 2006

FRANTZ COBY
PRIMARY EXAMINER